

Game Warden R. Wani, for permission to work in the sanctuary and for help throughout the study.

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3. NOTES ON THE INTER-BREEDING BETWEEN DOMESTIC AND WILD BUFFALO IN UPPER ASSAM

A number of interesting observations have been made in the past referring to Lower Assam and other parts of India, on the use made for breeding by the local village people, of the solitary wild bull buffalo that leaves the jungle temporarily at certain times of the year to join the domestic herds grazing in or near the jungle. There are varying opinions as to whether the wild bull and its subsequent inter-breeding with domestic animals is an advantage or otherwise, and likewise whether the bull is one that has been driven out of a wild herd by a stronger bull or has left the jungle of its own free will. During the past five years I have been able to devote considerable time to the study of this subject as applicable to this extreme corner of Assam, and in living close to the edge of the jungle that forms the local habitat of the wild buffalo, it has been possible for me to investigate personally instances of wild bulls joining the near-by village herds.

STUDY AREA

My observations apply to the area that may be termed Upper Assam, comprising the south bank of the Brahmaputra north and east of Dibrugarh, to Saikhowa on the Lohit River in the extreme

north-east. The northern boundary being the river, and the southern being National Highway 37. I refer in particular to the village areas immediately adjacent to the Dibrugarh and Saikhowa Reserved Forests and their adjoining unclassified jungles; the entire area covering approximately 150 square miles. These areas are low lying and subject to frequent flooding during the rains and consist of large expanses of dense cane and reed jungle, interspersed with 'bheels' which remain flooded throughout the year. These jungles offer both grazing and cover to the wild buffalo that abound in them.

The local villagers are mainly Morans, ex-Tea Garden workers and Miris, many of whom keep domestic buffaloes numbering from one to possibly ten per household. These people have found over the years that it is quite impossible for them, without special precautions and considerable inconvenience, to keep their own domestic bull buffaloes for breeding or even ploughing purposes, as such animals will certainly be killed by the visiting wild bulls that inevitably appear every year from the near-by jungle. They have, however, discovered through force of circumstance that such wild bulls fill the role of 'sire' to the village herds most admirably, with only certain inconvenient disadvantages which are ultimately outweighed by the advantages.

A most important factor that must be borne in mind when considering this subject in this particular locality, is that for many years now the people have of necessity been entirely dependent on the wild bull buffaloes for breeding. In consequence the domestic buffaloes of the locality show very definite traces of wild blood and are more like the wild buffalo in appearance than the purely domestic animal.

THE WILD BULL BUFFALO

It has been suggested that the solitary wild bull that visits domestic herds is a young one that has been driven out of a wild herd by a stronger bull. This I am sure may certainly be so in some cases but need not necessarily apply generally. The bull in the majority of instances recorded by me, has proved to be a middle-aged one but only in a very definite minority of cases has the bull been young. I have recorded only one instance of the visiting wild bull being an old animal, and then it was such a fine specimen that it was difficult to imagine its having been chased out of any wild herd by anything but the most powerful of rivals.

In this area the wild buffalo would appear to live in herds of

from five to fifteen animals. Due to the inaccessibility of this area during the rains my observations have been made mainly during the cold weather, during which on two occasions I have noted more than one mature bull apparently living quite happily together within such a herd. The cold weather covers the time at which domestic cows certainly come into season, and should this also be the case with wild cows the fact that more than one bull has been seen during such times with wild herds, would tend to contradict the theory that weaker bulls are driven out by stronger animals.

Wild bulls first start appearing in the vicinity of the villages at the time when paddy is well established with heads just beginning to form, and at such times they wreak havoc in the fields and would appear to come out of the jungle primarily to feed. While on such forays into cultivation wild bulls can hardly avoid contact with domestic herds as it is at this time that the herds are first taken out to graze at the jungle edges. The bull at such times finds itself alone and unrivalled amongst considerable numbers of domestic cows, the advantages of remaining either with or near them being apparent. In view of these considerations I am of the opinion that although some of these solitary bulls may well have been driven out of wild herds by stronger bulls, the majority have left the jungle of their own free will. Quite apart from my own conclusions this view has been put to me by a number of local buffalo owners.

I have found that usually only a single bull will appear at a time in any one particular place, but I have found it quite common for two bulls to be visiting villages simultaneously a mile or two apart. On only one occasion have I recorded two wild bulls appearing together at the same place. This occurred at the end of the cold weather when the domestic cows were grazing in household groups in an extensive area of paddy fields between a village and the jungle. On this occasion I saw the two bulls appear simultaneously from the jungle about twenty or thirty yards apart, quite obviously in company and well aware of each other's presence. Each bull joined a small group of domestic cows well within sight of each other and remained so until the evening when they were chased off by the herd boys. On coming together again at the jungle edge a fight ensued, and although I did not personally witness it, I found ample evidence of it when called to the scene almost immediately afterwards. After this altercation it was noted that only one bull continued to come out of the jungle at this point to visit the village herds, while the other was found some days later to be visiting a herd some two miles away.

BEHAVIOUR OF THE WILD BULL

It would appear that the visiting wild bulls are unable to tolerate even very young bull calves with any village herd that they may join. I have evidence this year of one such calf having been killed and two others that would surely have suffered the same fate but for the timely intervention of the herdsmen. On occasions a villager has attempted to keep a particularly good bull calf by grazing it away from the main herds. Sooner or later it has been necessary to graze such an animal on the jungle edge with the main herds when grazing elsewhere has become scarce, and the result has been that the young domestic bull has been very roughly treated by any wild bull that has appeared. For this reason young bull calves are usually sold, outside this area, at an age at which they become able to fend for themselves.

During the cold weather the grazing of the domestic herds falls into two distinct phases. The first covers a period from mid November to mid or late January when they are sent out with herdsmen to graze the jungle edge well away from the still standing rice crop. At this time a group of buffalo owners appoint a herdsman, frequently one of themselves assisted by two or three younger men or boys, who take the animals out to the jungle edge where a camp (kuti) is established. From this camp the buffalo are turned out to graze early each morning and returned each evening at about 4 p.m. The second phase covers a period from mid or late January until the end of March or early April. During this time the village buffalo are turned out daily to graze at will on the stubble in the paddy fields adjoining the villages or on the jungle edge, being returned each evening to their pickets at the homes of their respective owners.

During the first period the wild bulls join the herds early in the morning and remain with them, often close to some 'in season' cow until the herdsmen appear at about 4 p.m. to drive the cows back to the camp for the night. I have found that at this time the bull will either move a short distance into the jungle until the herd has been assembled, and then follow close behind and rejoin the cows once they have been tethered; or remain in the jungle until 8 or 9 p.m., possibly paying a quick visit to the near-by rice fields prior to rejoining his new found mistresses at the camp, where he stays until just before dawn at which time he will retire into the jungle to start the whole cycle again.

During the second period when cows are being turned out to graze at will and returned each evening to their owners' homes, the

wild bull again appears from the jungle early each morning and grazes with the herd the whole day even though they may wander back into populated areas. In the evening when collecting their buffalo the herdsmen drive off the wild bull which normally leaves without too much trouble, but will almost certainly return to the picket lines soon after dusk even though they may be situated well within the confines of the village. This is particularly so if during the day the bull has been keeping the company of any particular 'in season' cow.

It is at this time that one of the disadvantages of using the wild bull becomes apparent. When it finds an 'in season' cow it quite often retires with the cow into the jungle so necessitating the herdsmen going in search of her in order to return her to the herd in the evening. This often results in the two being disturbed, invariably upsetting the bull which will almost certainly attempt to chase off intruders, who if caught risk losing their lives. The herdsmen have learned that in such cases they must despite the risks involved, go in search of cows abducted in this way as their having failed to do so in the past has resulted on occasions in the cow 'going wild' and being lost.

During the night whether in a 'kuti' on the edge of the jungle or in the village picket lines, the bull remains quiet but alert in the midst of the cows sometimes standing, sometimes resting on the ground. The herdsmen at intervals throughout the night walk round their charges to see that all is well and providing they keep well clear of any cow to which the bull may be paying particular attention he will not normally become restive. I have had personal experience of this behaviour when staying with herdsmen in 'jungle kutis' where a small fire is kept burning most of the night and the herdsmen talk and even sing without unduly disturbing the bull. On one such occasion I was able to approach to within fifteen paces of a bull, shining a torch on him all the time without apparently alarming him unduly. Likewise milkers are not under normal circumstances harmed unless they get too close to a cow that may currently be enjoying the bull's favour.

Of all the instances of wild bulls appearing that I have investigated only two bulls have shown any particular aggressiveness beyond the circumstances that I have related. The general attitude of the herdsmen and milkers is that one can never be sure what a wild bull may do in any particular situation and so as they have absolutely no choice in whether the bull comes or goes, all are treated with the utmost respect which to an outsider might appear to be complete non-chalance.

SEASONS OF THE DOMESTIC COW AND TIMES AT
WHICH WILD BULLS APPEAR

Until the 16th August this year I had no evidence at all of wild bulls joining village herds or even appearing in the vicinity of the villages during the rains. On this date, however, in response to a summons from a near-by village, where wild bulls certainly appear during the cold weather, I went out to find that a young wild bull was coming right into the village early each morning and remaining there from about two to four a.m. In following him in his movements during this period I found that he visited, but made no attempt to enter almost all the tethering points of domestic buffaloes in the village. This was, however, only done after a period of feeding in the cultivations around the houses. The visits of this animal continued for a week and then ceased as abruptly as they had started. This behaviour I feel is very much an exception and would offer two reasons for bulls not usually leaving the jungle during the rains.

Firstly, from June to the end of September movement over even short distances for either man or beast in these areas is made very difficult by the heavy flooding of what is already most difficult terrain. The overflowing rivers merge so doubling the depth and surface area of the bheels and also form large areas of temporary swamp in the very lowlying reed beds between the jungle and the villages.

Secondly, the domestic buffalo comes into season during the cold weather, mainly in January and February when the floods have subsided and the rice crop offers ready grazing to any wild buffalo that may come out of the jungle.

The gestation period of the domestic buffalo is ten months and calves are therefore born during the following cold weather.

DOMESTIC COW SERVED BY A WILD BULL

It is interesting to note that observations made in the past have revealed that in other parts of the country many domestic cows served by wild bulls have failed to conceive and of those that have conceived a considerable proportion have died at the time of calving. I can find no evidence of this at all either from the local buffalo owners or from my own observations in this area. I find that the majority of domestic cows have conceived, the only ones not having done so being the smaller and weaker cows which are often new additions to the herd brought in from other areas. These likewise would seem to have been the only ones injured at the time of serving. I attribute

this lack of fatalities at the time of service and calving, quite contrary to what has been noted in other regions, directly to the fact that the cows of this particular area after many years of interbreeding with wild buffalo, are much better suited to mate with the wild bull than the purely domestic animal.

OFFSPRING OF THE WILD BULL AND THE DOMESTIC COW

The majority of calves by wild bulls survive but where such a calf has died it has not usually been at birth but anything up to ten days later. I have recorded only three instances of such deaths and the only conclusion I have been able to reach is that the mother in all cases has been unable to provide sufficient milk for the calf. Almost without exception calves by wild bulls are much larger and more sturdy than their purely domestic counterparts.

The differences between half wild and purely domestic stock are quite apparent. The former are considerably heavier in build and better looking than the latter. They tend to have much larger and more upright horns and shorter more powerful necks. The thicker chest and shorter more powerful legs, with hooves that are bigger and more rounded are quite distinctive as are the white markings on the legs and chest.

Opinions vary on the milk producing potential of the cross bred cow. The average yield of the purely domestic cow in this area is two to two and a half seers of milk per day. This is approximately three quarters of a seer more than is produced daily by the cow of mixed descent on the grazing available locally. However, there is no doubt that the cross bred animal can and will produce up to one seer more per day than the purely domestic cow if it is ranged freely in the jungle on really good grazing.

Local buffalo owners claim that cows of mixed descent do tend to give more trouble at the time of calving than their domestic sisters and are also very aggressively possessive of their offspring once born. They can also be expected to give a certain amount of trouble at the time of milking after the birth of the first calf, but seldom after that.

The male calves of mixed blood are usually sold when quite young and are much sought after by buffalo owners in areas to which wild bulls do not have access. They may be expected to realise a somewhat better price than a pure domestic bull calf as

they are invariably handsomer than the latter and make an equally good if not better plough animal.

From the very few occasions that I have been able to observe the bull of mixed blood there can be no doubt that they are somewhat more aggressive than the domestic bull. They are rather more difficult to deal with than the latter but not to an extent that they cannot be managed by the herdsmen. On the one occasion that I was present when such a bull was with a herd that was approached by a wild bull, the former showed considerable spirit in advancing to meet the intruder. It was not reluctant to fight but when the inevitable clash came it was just no match for the wild bull which only made off when a gun was fired.

I have been told by the local people that the animal that they fear most is the bull of mixed descent born in the jungle to a domestic cow that has 'gone wild' having been abducted as described earlier by a wild bull. Should such an animal leave the jungle to visit village herds it proves an absolute menace in every way. It is said to have little or no fear of man and is wilfully destructive and completely unpredictable in its actions. I have not, however, as yet personally come across such an animal.

I do not wish to give the impression that the solitary wild bull in this area is or can be treated with anything but the utmost respect as this is certainly not so. The villagers feel that the visits of such bulls are inevitable and although there are certain disadvantages in using them for breeding purposes these are ultimately outweighed by the advantages. The people have through years of experience come to know what to expect of the wild bull and act accordingly, making the very best of circumstances over which they have no control.

TIPPUK TEA ESTATE,

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November 19, 1968.

R. W. SCOTT

4. FURTHER EXTENSION OF RECORDED SOUTHERN RANGE OF LITTLE CRAKE, *PORZANA PARVA* (SCOPOLI)

In the *Journal* (65:217-218), Sálím Ali and one of us (H.A.) referred to an overlooked specimen of the Little Crane, *Porzana parva* (Scopoli), obtained in Bombay many years ago, which extended the currently accepted southward limit of this species. In the course of